

NIOSH SUMMARY ANNUAL CENTER REPORT

**UNIVERSITY OF MICHIGAN
Education and Research Center for
Occupational Health and
Safety Engineering**

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Submitted by:

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The University of Michigan Center for Occupational Health and Safety Engineering (COHSE), a NIOSH Education and Research Center (ERC) (the 'Center'), has been continuously funded by NIOSH since its establishment in 1982. The mission of the Center is to serve the region, nation and world as a center of excellence for research and graduate education in Occupational Health and Safety. We maintain academic and research programs in the disciplines of Industrial Hygiene (IH), Occupational Health Nursing (OHN), Occupational Safety Engineering and Ergonomics (OSE), Occupational Epidemiology (OE), and Hazardous Substances Academic Training (HSAT). Other programs in the Center include Continuing Education (CE), Outreach, Pilot Project Research Training (PPRT), and Targeted Research Training (TRT). We provide broad-based, interdisciplinary academic training in occupational health to ensure that graduates are qualified to pursue careers and assume leadership roles in the practice of occupational health and safety.

Faculty Promotions, Development and Awards

- **Professor Nadine Sarter** and Ph.D. student **Thomas Ferris** won the Best Paper Award at the 2009 Haptics Conference.
- **Professor Yili Lu** won the College of Engineering's Holt Award for Excellence in Teaching and has been promoted to full professor. Prof. Yili Liu organized a special session on Cultural Ergonomics at the 2009 meeting of the International Ergonomics Association in Beijing. This session represents an emerging area with important health and safety implications associated with multi-national business and manufacturing operations.
- **Professor Ted Zellers** received 2010 SPH Teacher of the Year Award.
- **Associate Professor Eduardo Villamor**, a noted nutritional epidemiologist and physician has joined the Department of Environmental Health Sciences
- **Dr. Kwangseog Ahn**, a new lecturer in Industrial Hygiene, has joined the Department of Environmental Health Sciences.
- New research track faculty appointments in EHS have included **Rachel Davis**, who conducts research on culture, dietary behaviors and chronic disease management among Latino and African American populations; and **Masako Morishita**, whose research focuses on investigations of source-to-receptor pathways and the health effects of airborne toxicants.
- **Professor Marie O'Neill** was approved for promotion to Associate Professor with tenure.
- **Professor Andrew Maynard**, one of the world's foremost experts in nanomaterial risk assessment, with training and experience in industrial hygiene and physics, has joined EHS as the first *Charles and Rita Gelman* Risk Science Professor and Director of the SPH Risk Science Center.

Student enrollment and graduation in the ERC academic programs

The table following shows the number of ERC-supported students enrolled and graduated during the 2009-2010 reporting year. Overall, the academic programs within the Center enrolled 87 students (45 Masters and 42 doctoral students), and graduated 23 students (19 Masters and 4 Doctoral students). Among the 23 graduates, 17 entered positions in occupational and environmental health and organizations around the world, 1 of the Masters students entered a doctoral program, and 4 PhD students entered postdoctoral fellowship programs.

Enrollment					Graduates				
	MPH	MS	PhD	Total		MPH	MS	PhD	Total
IH	10	1	9	20	IH	6	1	2	7
HSAT	6	1		7	HSAT	3			3
OE	11		13	24	OE	3		1	4
OHN		9		9	OHN		2		2
OSE		7	20	27	OSE		5	2	7

Continuing Education Programs

During the reporting year, 981 individuals across all occupational health and safety disciplines attended continuing education programs sponsored by the Center, accounting for 3083 person-days of training. One notable program was our NORA Symposium, which attracted 175 attendees and included as speakers the NIOSH Director, the Michigan OSHA Director, and the Federal Region V OSHA Administrator. A wide range and large number of outreach activities were undertaken by UM ERC faculty and staff, such as curriculum and research assistance to other academic institutions, professional consultation to a range of organizations, presentations to various groups, and publication of seminars on websites open to the public. We also provided technical expertise to expand a state-wide project providing ergonomic consultation and training to small businesses in Michigan.

Pilot Program Research Training

During the reporting year, the PPRT program received 10 proposals, the most ever, and funding was provided for four PPRT projects. The selected projects are listed below.

- Adaptation of a Field Prototype Micro-GC to Biological Monitoring of Exposure and Health Status
- Analysis of Respirable Silica Exposure During Lime Stabilization Roadway Construction Operations
- Neurotoxic Effects of Cumulative Exposures to Manganese and Lead: A Novel Study on Welders
- Assessment of the Biomechanical Impact in Microvascular Surgeries on Surgeon Health and Performance

PPRT projects are being tracked in terms of follow-up grants and papers and show many successes, e.g., Professor Tom Armstrong's trainee **Denny Yu** was funded to study musculoskeletal stresses and symptoms in surgeons; trainee **Sungchan Bae** had a grant to study finger motions; Assistant Professor Prof. **Nil Basu** received funding from the Michigan Institute for Clinical Health Research CTSA Pilot Grant Program for "In vitro- and epidemiology-based gene environment study of mercury with the Michigan Dental Association (MDA) cohort," and Assistant Professor **Chuanwu Xi** received a NIOSH/CDC R21 grant entitled "Prospective Study of Biofilms, Mycobacteria and Pseudomonads in Metalworking Fluids."

Visiting Partners Program

The Visiting Partners Program (VPP, formerly called Visiting Scholars Program) was launched, with the recruitment of a first group of four talented and diverse individuals. As a non-residential program, these mid-career professionals were recruited from outside academic institutions, union, non-profit Ann Arbor community-based organizations, and industry to develop and complete projects focused on Occupation and Environmental Health and Safety. Visiting Partners have access to the University of Michigan faculty mentorship, research librarians, UM's extensive library and web resources, GroundWorks media center, and the CTools web resource hub for off-campus communications. The Visiting Partners, titles and projects are listed below:

- **Sergio Caporali Filho**, Associate Professor at University of Puerto Rico – Medical Sciences Campus. He teaches in the Graduate School of Public Health, Department of Environmental Health - Industrial Hygiene Program. His VPP project is to develop, implement, and evaluate a bilingual online educational module on industrial ventilation covering the principles of general and dilution ventilation.
- **Jeff Gearhart**, Research Director at the Ecology Center, Ann Arbor. His project is to develop applied, real world methodologies to validate and then implement the use of Raman Spectroscopy and/or Fourier Transform Infrared Spectroscopy (FTIR) in screening consumer products for hazardous chemicals.
- **Stephen Mitchell**, Research Division Safety Chairman, Grievance Committeeman, Local Union Discussion Leader, and UAW Local 974 Executive Board Member. His project is to develop a tool to identify the phenomenon of underreporting injuries and illnesses in the workplace and the factors associated with underreporting.

- **Norbert Schiller**, principal consultant and owner of a full-service industrial hygiene consulting firm. He is also an adjunct Instructor at Madonna University. His project is to explore and develop a model curriculum for an undergraduate program leading to a degree in Environmental Health and Safety.

Student Awards and Accomplishments

- **Vivek Patel** received an American Industrial Hygiene Foundation Award.
- **Paula Johnson** received the Warren Cook Award.
- **Kevin Abernethy** received the Michigan Industrial Hygiene Student Association Award.
- **Eugene Yen** was named the UM Outstanding Student Leader.
- **Monica Silver** won the ASPH/EPA Environmental Health Fellowship.
- **Jalonne White-Newsome** was inducted into the Edward Bouchet national honor society.
- **Huda Elasaad** was recognized by the Air & Waste Management Association with certificate plus scholarship (\$1500) presented at Spring Conference (April 2010).
- **Thomas Ferris** and **Justin Young** won top prizes for posters presented at the 2009 U of M College of Engineering Graduate Symposium.

Development of Curricula, Courses, Teaching and Reference Materials

- EHS faculty **John Meeker** and **Rita Loch-Caruso** are each the Leader of projects in a newly-funded NIEHS Superfund Research Program Project focusing on endocrine disruptors and prematurity
- **EHS faculty** and ERC Director **Stuart Batterman** is the PI of a new EPA “Roadway” research grant.
- EHS faculty **Tim Dvornch** is the PI of one of the projects of a new to-be-funded EPA “Clean Air Research Center”
- EHS faculty **Howard Hu** and **Martin Philbert** are the PI and co-PI of an application to the NIEHS P30 Core Centers program reviewed by the NIH study section this past month. Entitled “Lifestage Exposures and Adult Disease”, the application involves 41 UM faculty members, 14 of whom are EHS faculty members and an innovative focus on epigenetic regulation, oxidative stress, and endocrine disruption as mechanisms that may drive a variety of disease processes caused by environmental agents.

Other Major Developments and Progress

- The Occupational Health Nursing program’s competing renewal was approved and funded for three years.
- A doctoral student from Chemistry was enrolled for a half-year program of coursework and directed research in OHS to encourage change in career path incorporating OHS.
- EHS has emerged as a partner of the UM Graham Environmental Sustainability Institute, of which an EHS doctoral student, Katie Bush, is a Graham Fellow, and EHS is in the process of developing a new training subplan on sustainability under the direction of Professor Stuart Batterman.
- EHS has become one of the major partners of the new UM Center for Global Health. Five EHS faculty members and 3 EHS doctoral students were involved in organizing a workshop on “Climate Change Impacts on Health in India---Research Needs” co-sponsored by the UM Center for Global Health, the US Centers for Disease Control, and the Indian Council for Medical Research that took place in Goa, India in August of 2009.